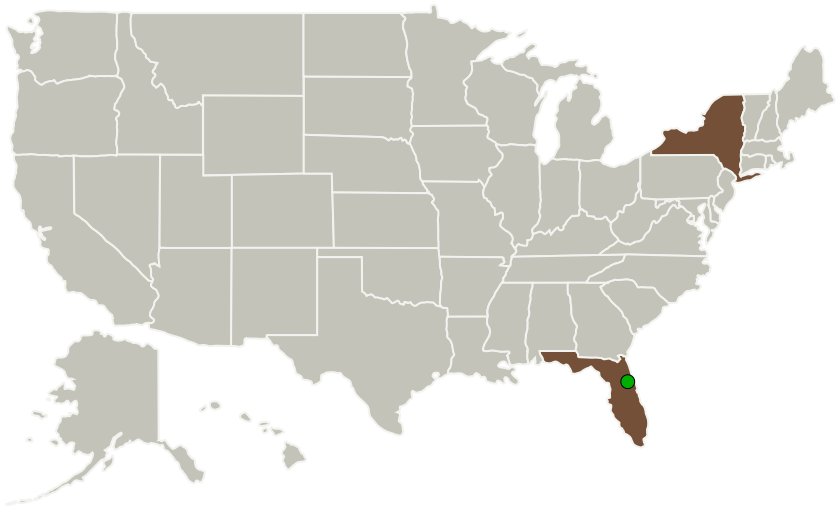
NanoDrill: 1 Actuator Core Acquisition System, Phase II

Completed Technology Project (2014 - 2016)

Project Introduction

We propose to design, build, and test a sample acquisition drill weighing less than 1 kg. The drill uses a novel method of core or powder acquisition, and is suitable for both use by both robotic platforms and astronauts. The core acquisition bit can be used for either a rock core, icy-soil or loose regolith acquisition. The continued development of robust sample acquisition and handling tools is of critical importance to future robotic and human missions to Mars, the Moon, Asteroids, and other planetary bodies. For these missions, consolidated or unconsolidated core samples (as opposed to, say, scooped regolith or collected drill cuttings) are of particular interest. We will conduct testing in the laboratory and in the field to demonstrate the drill's effectiveness both in relevant environments, in relevant operational scenarios.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Honeybee Robotics, Ltd.	Lead Organization	Industry	Pasadena, California
Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida

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Primary U.S. Work Locations	
Florida	New York

Project Transitions

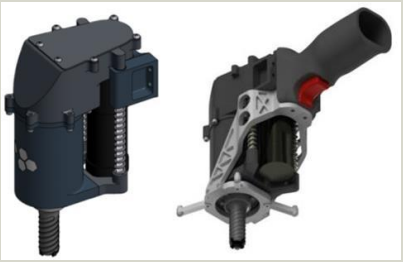
June 2014: Project Start

December 2016: Closed out

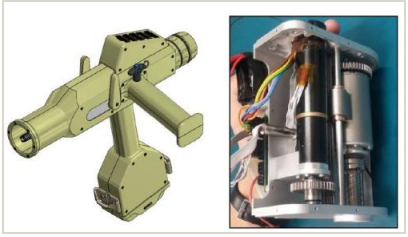
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137637)*

Images



Briefing Chart Image
NanoDrill: 1 Actuator Core Acquisition System, Phase II
(https://techport.nasa.gov/image/130047)



Final Summary Chart Image
NanoDrill: 1 Actuator Core Acquisition System, Phase II Project Image
(https://techport.nasa.gov/image/126596)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Honeybee Robotics, Ltd.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Kris Zacny

Co-Investigator:
Kris Zacny

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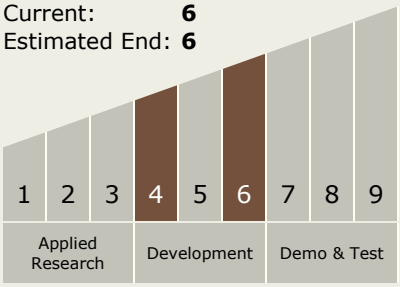
Completed Technology Project (2014 - 2016)

Technology Maturity (TRL)

Start: **4**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX04 Robotic Systems
  - TX04.3 Manipulation
    - TX04.3.2 Grappling Technologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System